Biological Evaluation
For The
Sugar Bowl Ski Resort
Master Plan

USDA Forest Service
Tahoe National Forest

May 1992

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Introduction

Project Background, Purpose and Need

In December 1988, the Sugar Bowl Ski Resort (Sugar Bowl) submitted a Master Development Plan (Master Plan) to the Tahoe National Forest for approval. This master plan includes several improvements in resort facilities and changes in existing programs.

Sugar Bowl's Master Plan addresses two primary purposes. First, the improvements will better able Sugar Bowl to meet expected demand for downhill skiing on the Tahoe National Forest. The improvements will be specifically oriented to providing a quality experience for "day skiers". Growth in the day skier market is expected to account from most of the projected increase in Sugar Bowl's annual skier visits.

Second, the improvements will allow Sugar Bowl to continue operating. Over the last several years, operations have been only financially marginal. Without the improvements, the long-term economic viability of the resort is doubtful.

An Environmental Impact Statement is being prepared for the Sugar Bowl Master Plan which assesses three alternative development scenarios. Alternative 2 is the originally-submitted Master Plan. Alternative 3A, the Modified Master Plan reflects EIS ID Team efforts to minimize environmental effects. These two development alternatives differ primarily in the arrangement and location of proposed facilities and developments, but would have similar wildlife effects. These alternatives are considered as one "project" in this analysis.

Background of the Biological Evaluation

When the Forest Service receives a proposal for a project, it assesses the proposal's potential effects on special-concern species. The two primary groups of special-concern species examined are federally-listed threatened or endangered species, species proposed for listing and Forest Service sensitive species. A Biological Assessment is prepared to address potential effects on the listed or proposed threatened or endangered species. A Biological Evaluation is prepared to address potential effects on Forest Service sensitive species. Because the U.S. Fish and Wildlife Service identified no listed or proposed species as occurring or potentially occurring at Sugar Bowl (Appendix A), no Biological Assessment was needed or prepared.

A review of the Tahoe National Forest's list of seven sensitive species identified five species that occur or may occur at the Sugar Bowl Ski Resort. The five sensitive species are the marten (*Martes americana*), Sierra Nevada red fox (*Vulpes vulpes necator*), northern goshawk (*Accipiter gentilis*), spotted owl (*Strix occidentalis*), and willow flycatcher (*Empidonax trailii*). A lack of suitable habitat is the principal reason the great gray owl (*Strix nebulosa*) and Pacific fisher (*Martes pennanti pacifica*) are unlikely to occur near the resort.

The goal of this Biological Evaluation is to determine the Sugar Bowl proposed project will result in a trend toward any of the five species becoming listed as threatened or endangered. Information presented to support the determinations includes a description of the proposal, a synopsis for each species, and an assessment of the potential effects of the project on each species. The synopses characterize the ecology, natural history, and distribution of the five species as they relate to the proposed project. The impact assessment looks at the potential direct, indirect, and cumulative effects of the project on each species.

Current Management Direction

The Tahoe National Forest's Land and Resource Management Plan (LRMP) is the comprehensive, long-term planning document for the forest. It is the primary tool used to balance competing demands for the forest's resources and allocate lands to these demands. The LRMP specifically provides for the maintenance, improvement, and expansion of ski resorts in the Donner Summit area, including Sugar Bowl.

The LRMP identifies the Tahoe National Forest as an important destination for recreation (USDA Forest Service 1990). This conclusion is based on at least two considerations. First, demand for downhill skiing on the forest is high. This situation is particularly clear on weekends and holidays when the existing resorts are overcrowded.

Second, the LRMP predicts significant growth in downhill skiing over its 10-year planning period. Day skiers rather than destination skiers are expected to account for most of the project increase. The Central Valley and San Francisco Bay Area are expected to be the primary sources of the day skiers.

Weighing competing demands and available resources, the LRMP allocated enough lands to accommodate the expected growth in downhill skiing. The allocation included expansion of existing resorts, including Sugar Bowl, as well as the construction of three new resorts. Although LRMP policy favors expansion of existing resorts before developing the new resorts, there will be a need to develop new resorts during the planning period.

The Tinkers Management Area (MA 071) in the LRMP identifies deer and the riparian and meadow groups as selected emphasis species. Other species, such as trout, are not appropriate for this specific area because no perennial streams are present. The desired species composition for this area includes both the management emphasis species described above and Forest Service sensitive species currently found in the project area.

The desired future condition for sensitive species occurring in this area is to maintain existing optimal and suitable habitat for each species. Human activities in the area have removed, degraded, and fragmented a substantial amount of habitat since development began during the 1930's. Keeping as much of the remaining optimal and suitable habitat intact as possible will minimize adverse effects on the sensitive species and minimize the potential to cause further declines in their populations.

Description of the Proposed Project

The Proposed Master Plan (Alternative 2) and the Modified Master Plan (Alternative 3A) include very similar physical features, and identical construction and operation practices. Each aspect of the project is described below with differences between the alternatives highlighted where appropriate. The physical features of the project would increase the capacity of the resort from a comfortable carrying capacity (CCC) of 3,360 under the no action alternative to 5,780 with the proposed project. These features include new lifts and ski trails; new day lodge, employee housing and maintenance facilities; and new access, parking and infrastructure improvements. Alternative 4 is a scaled-down version of Alternative 3A.

Ski Lifts and Trails

Both Alternatives 2 and 3A would include construction of three new lifts: the 4,100-foot Mt. Judah lift; the 2,800-foot Jerome Hill lift; and the 450-foot Beginner lift. The Mt. Judah and Jerome Hill lifts, both detachable quads with hourly capacities of 2,800 persons, would be the primary lifts serving new ski terrain on Mt. Judah. The Beginner lift would have a capacity of 800 persons per hour. In addition, the Disney lift within the existing resort area would be upgraded in capacity and realigned to improve flow patterns at the base are and to improve access to existing underutilized terrain on the east face of Mt. Disney.

The lifts would serve about 106 acres (102 acres under Alternative 3A) of new ski trails primarily oriented to beginner, novice and low intermediate skiers. About four of these acres will be served by the Beginner lift. Ski trail improvements would include installation of a permanent snowmaking system (air/water pipelines, electrical, controls) and, under Alternative 3A, night lighting facilities. In order to allow early season opening of the resort, about 3.3 acres of existing alder/willow stands within ski trail areas would be pruned to minimize the amount of snow cover needed to support skiing. After an initial pruning to a height of about six inches, these areas would be allowed to regenerate and would be entered periodically for maintenance pruning in accordance with biologist's recommendations.

Base Facilities

Both Alternatives 2 and 3A would include the construction of a new 30,000 square foot day lodge, a 4,200 square foot residential building which would house 40 employees and a 14,000 square foot maintenance facility. All three structures would be adjacent to the parking area. The maintenance facility would house the snowmaking system compressors and controls and night lighting controls and would include a paved apron area and underground fuel storage tank.

Access, Parking and Infrastructure

The alternatives would include the construction of new vehicular access from Donner Pass Road to the base facilities. A portion of the Alternative 2 access road would involve improving a 2,800-foot section of Lake Mary Road, the remainder (3,200 feet) involving new construction. The entire access road under Alternative 3A and 4 (3,300 feet), would involve new construction. A parking area would be constructed at the terminus of the access road. The parking area would accommodate 1,400 vehicles and occupy 10 acres under Alternative 2 and would accommodate 1,100 vehicles and occupy 8 acres under Alternative 3A. Parking is further reduced to 850 vehicles and 6.4 acres for Alternative 4.

Construction

Construction of lifts, ski trails, base facilities, access and parking improvements would involve about 90 acres of vegetation removal and 70 acres of selective grading. In steep or environmentally sensitive areas, logs would be transported to the landing over snow or by helicopter logging. Grading would be concentrated along the access road, along lift lines, in the parking area and on the lower portions of ski trails in the vicinity of the day lodge. Revegetation and erosion BMPs would be applied to disturbed upslope areas as defined in the Operations Plan. Revegetation would be assisted with irrigation water applied from the snowmaking system. Runoff from the parking area would be routed through a stormwater, sediment detention pond.

Operations

Operations activities relevant to the Biological Evaluation include operation of the snowmaking system to enhance natural snowfall when necessary. Winter operations would also include the daily after-hours operation of grooming equipment. Summer maintenance would include ski trail maintenance, vegetation management and general facility maintenance. Road access to the expansion area during the summer months would be restricted to resort maintenance and forest administration.

This section presents the abundance, distribution, and ecology of the five species under consideration in this evaluation. The descriptions focus on aspects of these parameters that the proposed project may affect. Information presented here is primarily based on literature and site-specific studies conducted of the Sugar Bowl Resort.

Marten

The marten is a secretive and usually solitary high-mountain animal. According to Freel and Stewart (1991) researchers have sighted martens in the northern Sierra Nevada at elevations ranging from 3400 feet to 10,400 feet. The mean elevation of sightings is 6600 feet (Sanders 1990, Freel and Stewart 1991).

Home ranges of martens vary with the availability of prey and preferred habitat (Freel and Stewart 1991). In general, the home ranges of males are larger than those of females. Under optimal conditions, studies indicate the average male marten's home range occupies about 1400 acres. With low-capability habitat, the home range of male martens increases to about 2500 acres.

During their review of literature on the marten, Freel and Stewart (1991) identified three principal features that characterize habitat preferred by the marten. First, areas inhabited by martens contain dense, multi-storied, multi-species, climax coniferous forest (Freel and Stewart 1991). The forest also contains many fallen trees and snags with dbh's greater than 24 inches. Second, the marten's habitat includes dense riparian corridors extending between stands of forest. Martens may make use of alder/willow stringers as travel corridors under specific conditions. Finally, the marten's habitat has small openings (< 1 acre) with good ground cover interspersed throughout the inhabited area. Martens forage in these openings.

These three principal features occur in the general Sugar Bowl area. Red fir and lodgepole pine forests cover a sizable portion of the area. Although canopy closure and size classes of the red fir forest vary considerably throughout the area, parts of the forest contain the preferred characteristics described above. These denser stands occur at the area's lower elevations. The stands also encompass small openings with good ground cover.

Jones and Stokes Associates (1991) found about 38 acres of alder/willow stands in Sugar Bowl's existing ski area and proposed expansion area. These stands occur as narrow stringers with 100-percent canopy closure. Also, they are typically 10 to 15 feet high and support a herbaceous understory of grasses, sedges, and forbs.

During her field surveys, Sanders (1990) tried to identify areas within the Sugar Bowl Resort and expansion area that may be suitable for martens. She found the area southeast of Lake Mary near the proposed beginner ski trails particularly suitable. A closed canopy, red fir forest occupies this area. Within this forest, openings with rock outcrops, montane chaparral, and alder/willow stands occur.

Although no-one has reported any observations of martens for the Sugar Bowl Resort, martens may occur in the area. This conclusion is based on four principal considerations. First, martens have been recorded on nearby Forest Service and private lands, including near Lake Angela. Second, suitable habitat exists in and near the resort. Third, martens are adept at avoiding people. Thus, martens inhabiting the area may not have been sighted. Finally, martens may have been seen, but the observations were not recorded with California's Natural Diversity Database or the Forest Service.

Sierra Nevada Red Fox

Little is known about the Sierra Nevada red fox. The primary reasons for this lack of information are its habitat is remote, its numbers are few, and its nature is elusive. In general, the fox occurs at elevations between 5000 and 8500 feet. The largest recorded populations were around Mount Shasta, Lassen Peak, and Mount Whitney, and in the mountains west of Mono Lake (Sanders 1990).

Although red foxes inhabit a variety of habitats, the literature indicates some preferences exist. Red fir, lodgepole pine, and mature Jeffrey pine forests and alpine fell fields comprise the preferred forest habitats. Mountain meadows, rock slides, and talus slopes are the preferred open habitats. The fox prefers mountain meadows and open forest stands for hunting. It dens in natural cavities found in rock slides and talus slopes, in hollow stumps, or in logs.

Potentially suitable habitat exists in and near Sugar Bowl (Sanders 1990). Locally, the red fir forest, montane meadow, and talus slopes may be suitable.

Sanders (1990) found no evidence during site-specific studies indicating the red fox inhabits Sugar Bowl or adjacent properties (Sanders 1990). Records of observations in or near the resort are nonexistent. The closest and most recent sighting was a fox seen near Truckee in 1971 (California Department of Fish and Game 1990). This observation was about 25 miles northeast of Sugar Bowl.

Northern Goshawk

The goshawk is a raptor associated with woodlands and forests. In the Sierra Nevada, goshawks breed from the mixed conifer forests at low elevations up to, and including, the lodgepole pine forests at high elevations (Fowler 1988). They also nest in eastside ponderosa pine forests. In winter, goshawks occur from the lodgepole pine forest downslope to blue oak savannah.

Because goshawks have stringent requirements for nest sites, concerns focus on their breeding habitat needs. In general, goshawks select older, coniferous, mixed, or deciduous forest for breeding (Fowler 1988). These forests provide the large trees the birds prefer for nest placement and a high percent canopy closure. Optimal, suitable, and marginal canopy closures range from 60 to 100 percent, 50 to 59 percent, and 30 to 49 percent, respectively. A closed canopy provides protection from predators, thermal cover, and the open space beneath needed for maneuvering during flight.

Fowler (1988) also classifies forest habitats as optimal, suitable, and marginal. Optimal habitat consists of mixed conifer, red fir, Jeffrey pine, and ponderosa pine at large tree stages. These forest also provide suitable habitat at the pole or medium stage. Large tree stages of lodgepole pine, aspen, and deciduous riparian stands near other stands are also considered suitable habitat. Marginal habitat consists of isolated deciduous riparian areas.

Aspect and slope also appear to influence the suitability of stands for nesting. Optimal nest sites have a north to east aspect. The aspect of suitable stands ranges from northwest to southeast. Most goshawk nests are found in stands on gentle to moderate slopes (slopes less than 25 percent). Stands on slopes of 50 percent or greater are thought to be unsuitable for goshawk nesting.

Goshawks appear to prefer nest sites with a 124-acre minimum core area surrounding the nest (Fowler 1988, Sanders 1990). This core area is believed to provide protection from disturbance. Goshawks do not tolerate disturbance well during nesting (mid-March to early September). Nests in stands with a core area less than 124 acres appear to experience higher rates of inactivity and abandonment.

Although no goshawk nests have been recorded at Sugar Bowl, an area containing the appropriate canopy closure, large trees, and slope and aspect characteristics for breeding goshawks exists within its boundaries. This area is near the proposed parking lot and the beginner ski trails. Most of the remaining area within Sugar Bowl and the proposed Mount Judah development is unsuitable because it consists of sparse stands on steep slopes.

Although an area with high canopy closure, large trees, and appropriate slope and aspect is present at Sugar Bowl, it is probably marginal habitat, at best. This habitat occupies less than 50 acres. Thus, its areal extent is well below the 124-acre minimum core area described above. If any goshawks tried to nest in this area, they would probably not be productive.

Although habitat at Sugar Bowl is limited and marginal for goshawks, habitat for the bird occurs nearby. The Forest Service has identified suitable habitat on Forest Service land southwest of Mount Judah. Additionally, private lands adjoining Sugar Bowl have additional suitable habitat.

California Spotted Owl

In the Sierra Nevada, California spotted owls occur most often in mixed conifer forests. However, they are also found in red fir. California spotted owls breed from ponderosa pine forests upslope to lower-elevation red fir forests below 7600 feet.

Regardless of forest species composition, breeding California spotted owls need a dense canopy cover. The owls are sensitive to overheating. To minimize the potential for overheating, they are strictly nocturnal and seek shady stands for daytime roosting. Stands of large trees with some understory trees are typically selected for nest sites.

The closest known California spotted owl nest is in the North Fork of the American River drainage basin several miles southwest of Sugar Bowl. This nest was active when first found in 1984. Surveys during August 1991 suggest it was active that year as well.

The land between the owl nest and Sugar Bowl is probably of little value to these owls. Most of this land has no forested cover. Because the crest of the Sierra Nevada Mountains passes through the general area, naturally-occurring treeless areas are extensive. In addition, human developments, such as a major power line/railroad/highway corridor, two ski resorts, and a large lake bed, have removed timber. These natural and man-produced clearings have so fragmented the remaining forested habitat that it probably does not support regular use by the owls nesting southwest of Sugar Bowl.

To assess the potential for occurrence of California spotted owls at Sugar Bowl, the resort and a surrounding 1.5-mile zone were analyzed for potential owl habitat. About one-third of this area supports some habitat that may be suitable for spotted owls. Most of this habitat occurs at the lower elevations. Although some suitable habitat may exist, its areal extent is thought to be insufficient to support an owl.

In 1989, 1990, and 1991, the Forest Service conducted surveys for the California spotted owl at Sugar Bowl. The surveys were conducted using accepted methods (see Appendix B) in areas thought to be suitable for the species. No owls were found during any of the surveys.

Willow Flycatcher

Willow flycatchers are present in California during the summer. They commonly arrive in late May to early June. Following their arrival, males set up breeding territories and pair with females. The birds remain on their territories until they begin their migration south in August (Fowler et al. 1991).

In general, willow flycatchers nest wherever mesic willow thickets occur. Historically, these thickets occurred throughout California. However, over the last 40 years, they have been altered or eliminated from most of the lower elevations. Consequently, willow flycatchers no longer occur in these areas.

Now, most only breed in isolated mountain meadows of the Sierra Nevada and along the Kern, Santa Margarita, and San Luis rivers where suitable habitat exists (Sanders 1990, Fowler et al. 1991). Nesting willow flycatchers have been recorded at Lake Van Norden northwest of Sugar Bowl.

Data from a variety of studies indicate two of the most important components of breeding territories are cover and water (Fowler et al. 1991). Shrubs, such as alders or willows are essential elements on willow flycatcher territories. However, they do not occupy extensive, contiguous patches of willows. They prefer willow thickets interspersed with open meadows. Standing or flowing water must be present during the early stages of breeding and pair formation.

The size of meadows near willow thickets may limit the suitability of the habitat for willow flycatchers. Studies have found a statistically significant positive association between the presence of willow flycatchers and increasing meadow size (Fowler et al. 1991). These studies found meadows occupied by willow flycatchers were larger than 20 acres. Although smaller meadows sometimes support birds and may appear suitable, they are not considered functional habitat because small bird populations commonly die out and are infrequently reestablished.

Sugar Bowl and the proposed expansion area on the face of Mount Judah provide marginally suitable habitat for willow flycatchers. Although alder/willow stands are present in the area, they are suitable only as resting and foraging habitat for migrating birds. They are not suitable as breeding habitat. Field surveys indicate the alder/willow stands primarily occur as island inclusions within the coniferous forest (Jones and Stokes Associates 1991). They do not have the associated meadows of sufficient size to meet the birds' needs.

To ensure that willow flycatchers are not breeding at Sugar Bowl, Sanders (1990) conducted surveys for the birds during the 1990 breeding season. She found no willow flycatchers.

This section describes the potential effects of Sugar Bowl's project on sensitive species being considered in this evaluation. Direct and indirect effects are presented first for each species. Then,. cumulative impacts are described.

Direct and Indirect Effects

Marten

Sugar Bowl's project could cause short- and long-term effects on the marten. The project would remove some potentially suitable habitat and increase fragmentation of remaining habitat. Sugar Bowl Alternatives 2 and 3A would remove 26 to 32 acres of red fir forest from the lower portions of proposed ski trails. This removal would reduce available suitable habitat in the area over the long-term. It also would fragment the remaining habitat by increasing the number and size of open areas separating uncut forest. In addition to being unavailable as foraging or resting habitat, the open areas would impede movements of any martens occupying the area. Martens would not cross the open areas because the timber remove would leave too little protective ground cover.

In addition, about 3.3 acres at alder/willow habitat would be prunned in ski trail areas. The planned pruning could cause short-term effects to the marten. However, over the long-term, it probably would not adversely affect the marten (Jones and Stokes Associates 1991). This conclusion is principally based on two considerations. First, loss of security cover to pruning would not be permanent. After the initial cutting, the alder and willow would re-sprout. This new growth would provide sufficient overhead cover for martens to use the stringers as travel corridors (Jones and Stokes Associates 1991).

Second, Sugar Bowl will discontinue its existing pruning practices on 3.9 acres of alder/willow habitat within its present operations when it begins to prune the 3.3 acres in the expansion area. Once the previously-pruned alder/willow stringers fully recover, the total acreage of un-pruned alder/willow habitat would essentially remain unchanged.

Although potentially suitable habitat for the marten would be adversely affected in the short- and long-term, martens would not be significantly affected. This conclusion is principally based on two considerations. First, the areal extent of the project's disturbance would affect a comparatively small portion of the home range of any single marten that might inhabit Sugar Bowl. Even under optimal habitat conditions, Sugar Bowl would disturb less than 10 percent of a marten's range. Second, most of the Sugar Bowl resort is already unsuitable for martens.

Sierra Nevada Red Fox

The proposed project would adversely affect habitat thought to be potentially suitable for the fox. The overall direct and indirect effects of the project would be removal of habitat suitable for foxes and increased fragmentation of remaining habitat, respectively. The clearing of red fir forest from around the beginner ski trails would reduce suitable habitat at Sugar Bowl. In addition, the 26 to 32 acres of this habitat to be cleared for ski trails and lifts would further fragment remaining habitat.

Although potentially suitable habitat for the red fox would be adversely affected over the long-term, the fox itself would not be significantly affected. This conclusion is principally based on the lack of red fox sightings at or near Sugar Bowl. The Sierra Nevada red fox may not inhabit Sugar Bowl or its immediate environs. Furthermore, if the fox does occur in the area, it is present at very low densities. Thus, the project is unlikely to affect the fox significantly.

Northern Goshawk

The proposed expansion of Sugar Bowl may affect the goshawk indirectly over the long-term. Because goshawks are probably not now occupying habitat at Sugar Bowl, the project would not affect the bird directly. However, the project would remove marginally suitable habitat for the bird.

The proposed expansion of Sugar Bowl would adversely affect unoccupied habitat that is marginally suitable for nesting goshawks. It would remove some of this habitat and increase fragmentation of the remaining habitat. The clearing of stands from the parking lot and beginner ski trails would reduce the size of existing potential nesting habitat to well below its present 50 acres.

Although marginally suitable habitat for the northern goshawk would be adversely affected, the hawk itself would not be significantly affected. This conclusion is principally based on three considerations. First, nesting goshawks have not been found at Sugar Bowl. No records exist to indicate nesting is occurring or has occurred at the Sugar Bowl Resort.

Second, habitat at Sugar Bowl is only marginally suitable for goshawks, at best. Although an area of about 50 acres exists within Sugar Bowl's boundaries with the appropriate canopy closure, large trees, and slope and aspect characteristics, it is too small. Because its size is well below the 124-acre minimum recommended for a successful goshawk nest, the area probably would not support nesting goshawks, with or without the Sugar Bowl expansion project. Also, the area experiences a comparatively high degree of disturbance.

Finally, habitat that is better than Sugar Bowl's marginally suitable habitat is available on nearby private lands. Goshawks nesting in Sugar Bowl's environs would probably select habitat on these lands before nesting at Sugar Bowl.

California Spotted Owl

The proposed expansion of Sugar Bowl probably would not affect the owl over the short- or long-term. Essentially, neither the bird nor attractive habitat for the species occur at Sugar Bowl.

The proposed project would adversely affect habitat that is marginally suitable for the owl. Overall, the project would remove marginally suitable habitat for the spotted owl and increase fragmentation of the remaining habitat. The clearing of stands from the lower elevations would reduce the areal extent of the marginally suitable habitat. The 26 to 32 acres of newly-created open spaces would further fragment remaining potential habitat for the spotted owl.

Sugar Bowl's proposed expansion would not adversely affect spotted owls nesting nearby. The nest is too far away to be directly affected. Also, data indicate the habitats occurring between the nest and Sugar Bowl do not support regular use by the owls (see Appendix B).

Although marginally suitable habitat for the spotted owl would be adversely affected, the owl itself would not be significantly affected. This conclusion is principally based on three considerations. First, spotted owls do not nest at Sugar Bowl or in the proposed expansion area. Specific surveys conducted at Sugar Bowl located no spotted owls.

Second, habitat at Sugar Bowl probably cannot support an owl. Most of the Sugar Bowl analysis area (see Appendix B) is occupied by habitat that is not suitable habitat for the owl. In addition, only marginally suitable habitat occupies the remaining one-third of the analysis area. Although the habitat has some of the canopy closure and large tree characteristics for nesting spotted owls, it is fragmented into blocks thought to be insufficient in size to support an owl.

Finally, the proposed project would not adversely affect the spotted owls inhabiting the nearby North Fork of the American River watershed. The occupied nest is too far away and the owls probably do not regularly use Sugar Bowl or the habitats occupying the area between Sugar Bowl and the nest.

The project therefore will have no direct, or indirect effect on the California spotted owl.

Willow Flycatcher

The proposed project would adversely affect marginally suitable habitat for the willow flycatcher. The pruning of 3.3 acres of alder/willow stands on the slopes of Mount Judah would be the primary impact. Once pruned, these alder/willow stands would not support resting or foraging by any migrant willow flycatchers that might wander through Sugar Bowl. In addition, the pruning would further fragment Sugar Bowl's remaining habitat for the willow flycatcher.

Although marginally suitable habitat for the flycatcher would be adversely affected, the bird itself would not be significantly affected. This conclusion is principally based on two considerations. First, the alder/willow stands present at Sugar Bowl only provide habitat suitable for resting and foraging. Use of this habitat

is most likely during migration. Because the habitat is not suitable for breeding, willow flycatchers are unlikely to occur at Sugar Bowl regularly. Thus, the loss and fragmentation of habitat at Sugar Bowl would adversely affect only the occasional use of the resort by migrating willow flycatchers.

Second, Sugar Bowl's expansion proposal would result in no net loss of alder/willow habitat over the long-term. The proposal includes an agreement by Sugar Bowl to stop pruning 3.9 acres of alder/willow that they are now cutting. Once these stands grow out, the areal extent of available habitat would essentially be the same as what is present now.

Cumulative Effects

This part of the analysis evaluated the potential cumulative effects of Sugar Bowl's proposed expansion in conjunction with past, present, and foreseeable projects in the area. The analysis focused on the area encompassed by project area and lands occurring within the Upper South Yuba River watershed. For the California spotted owl, the area within 1.5 miles of the project area was analyzed.

The analysis area has changed substantially over the last 60 years. Sugar Bowl's construction during the 1930's permanently eliminated habitat and introduced roads and disturbance into a relatively pristine area. Since then, other developments and activities have also occurred, including timber sales, a major power line/railroad/highway corridor, and residences. Together, these developments and activities have removed, degraded, and fragmented habitat. Consequently, the many projects in the area have substantially reduced the quality and quantity of habitat in the analysis area since the 1930's.

Cumulatively, Sugar Bowl's proposed expansion and other foreseeable future projects would not have significant effects on the Forest Service's sensitive species occurring in the analysis area. The foreseeable future projects would remove little suitable habitat and Sugar Bowl's project is unlikely to add to any significant cumulative impacts on sensitive species. Habitats at Sugar Bowl for sensitive species are marginally suitable, at best. They are also limited and already fragmented. Additionally, regular use of the habitats by any of the five species is undocumented and doubtful. Thus, the incremental impacts of Sugar Bowl's project on these five species are unlikely to affect the overall significance of cumulative impacts of projects proposed within cumulative effects analysis area.

Management Recommendations and Final Determination

Several management options exist that will further ensure that none of the five sensitive species would be significantly affected. These options are listed below.

- Reconfigure proposed ski trails to reduce the affected alder/willow habitat acreage to 3.3 acres (acreage 1.8 under Alternative 4).

- Discontinue pruning similar-sized alder/willow stands on Sugar Bowl's private property and allow them to grow to their full potential height. This would ensure the project would result in no net loss of alder/willow habitat.

- Implement the "Modification of Treatment Procedures" described by Jones & Stokes Associates, Inc. (1991) for pruning alder/willows in the existing and proposed resort areas, including:

    - Stands of alder/willow to be treated initially should be cut to within six inches of ground level. Branches that sprout the following spring would more readily lay over/under a snow load than under the existing practice of initially cutting stands at a two-foot height. This procedure would allow stems to grow taller and thereby provide greater wildlife cover values before additional pruning is required.

    - Initial cutting should be delayed at least until September. This action would minimize direct impacts on wildlife by avoiding the breeding season of most wildlife species. Cutting earlier would increase the likelihood of nest destruction or direct mortality.

    - Slash material from the initial stand cutting should either be piled or burned or removed from the site. Slash materials should not be chipped and spread over the site because the mulch layer may inhibit or reduce the establishment or vigor of herbaceous plants.

    - In years following initial cutting, remedial cutting should not take place until branches are at least four feet tall.

    - Snowmaking should be used when economically feasible to cover willow/alder stands in early portions of dry years to increase the snow depth and reduce the number of stems that must be cut.

    - After initial cutting, remedial cutting should be rotated among the treated areas so that all areas are not treated in the same year. This procedure would minimize impacts on wildlife by ensuring that some taller, denser, treated alder/willow habitat is available in any given year.

- Monitor pruning of alder/willow stands annually to ensure Sugar Bowl is complying with management recommendations.

- Implement a revegetation plan to restore or replace all wetland areas filled, damaged, or disturbed by project activities at a minimum ratio of 1:1 for in-kind restoration. The revegetation plan should include a monitoring program to insure successful establishment of wetland replacement plants.

- Select a minimum number of construction crossings across alder/willow habitat, preferably in a narrow part of the corridor. Clearly outline these areas on plans and specifications and flag designated crossings on the ground. Confine all heavy equipment traffic to defined crossings using fencing.

- Except at designated crossings, all montane riparian scrub or wet meadow habitat should be considered a sensitive zone and off-limits to vehicles and heavy equipment. These areas should be fenced and plans and specifications should clearly state that these areas are off-limits.

- Maintain a travel corridor for year-long marten use by reducing the width of the planned ski trail that is about 150' east of the top terminal of the proposed beginner chairlift. This ski trail will be narrowed to no more than 16 feet at one spot to facilitate marten travel corridor, and a wildlife biologist shall be involved in the final layout of the ski trail at this spot.

Final Determination

None of the five sensitive species that occur or may occur at the Sugar Bowl Resort would be significantly affected by Sugar Bowl's proposed project. Accordingly, the project would not result in a trend toward any of the five species becoming listed as threatened or endangered. These conclusions are based on information available for the five sensitive species and the proposed project and the suggested management recommendations.

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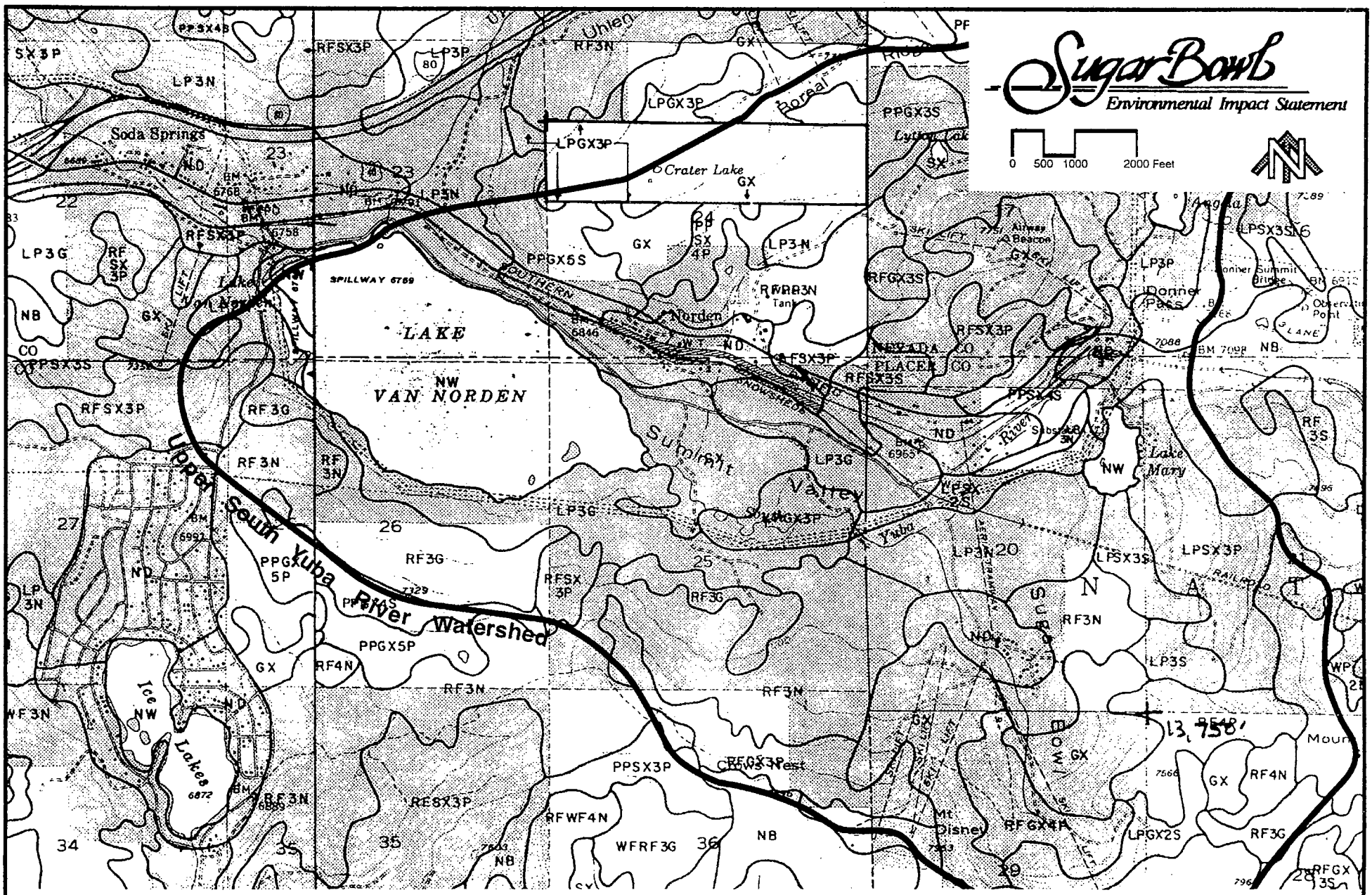
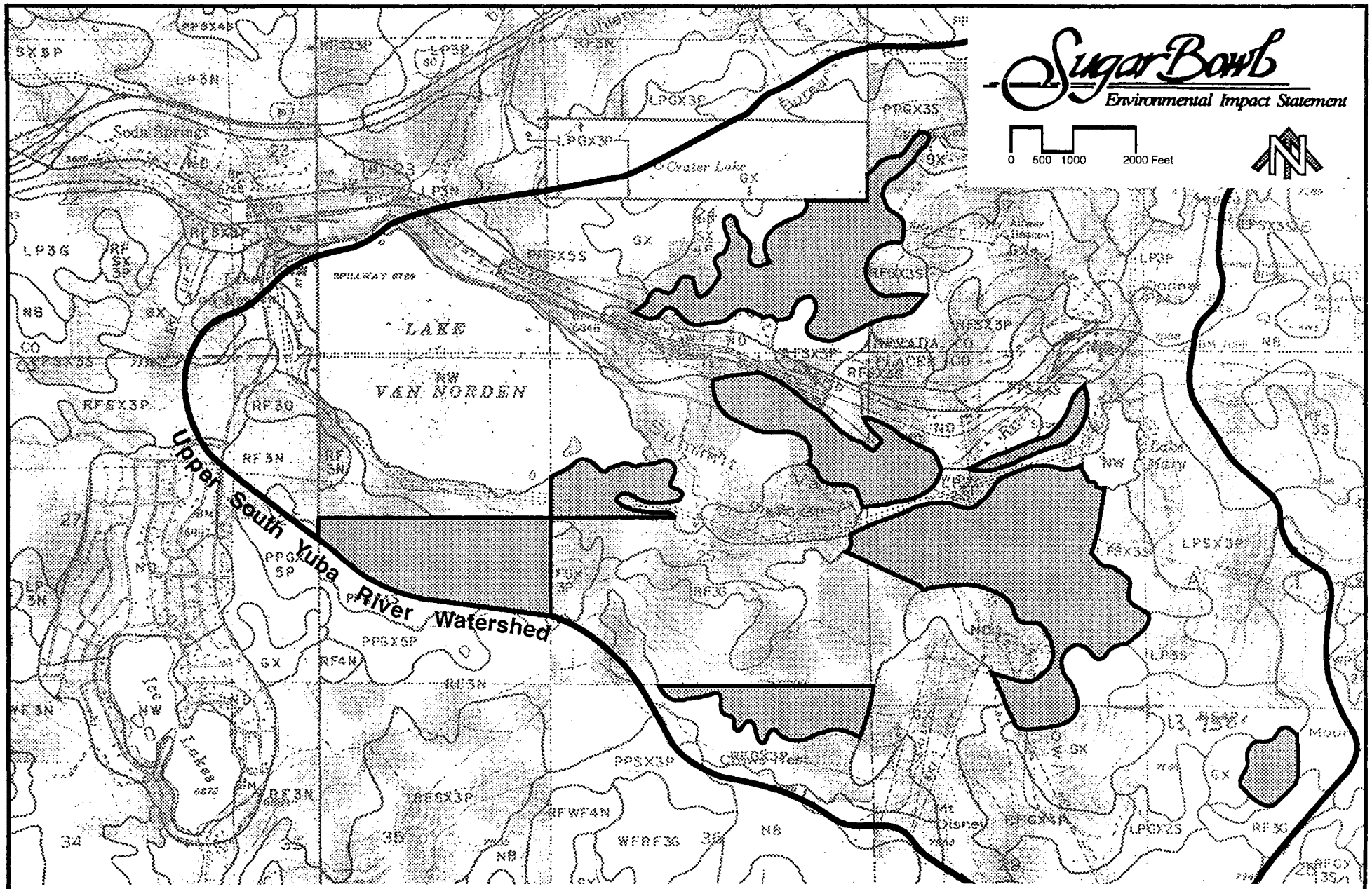


TIMBER TYPE MAP

Source: USFS Timber Type Maps
April 1992

Figure 1

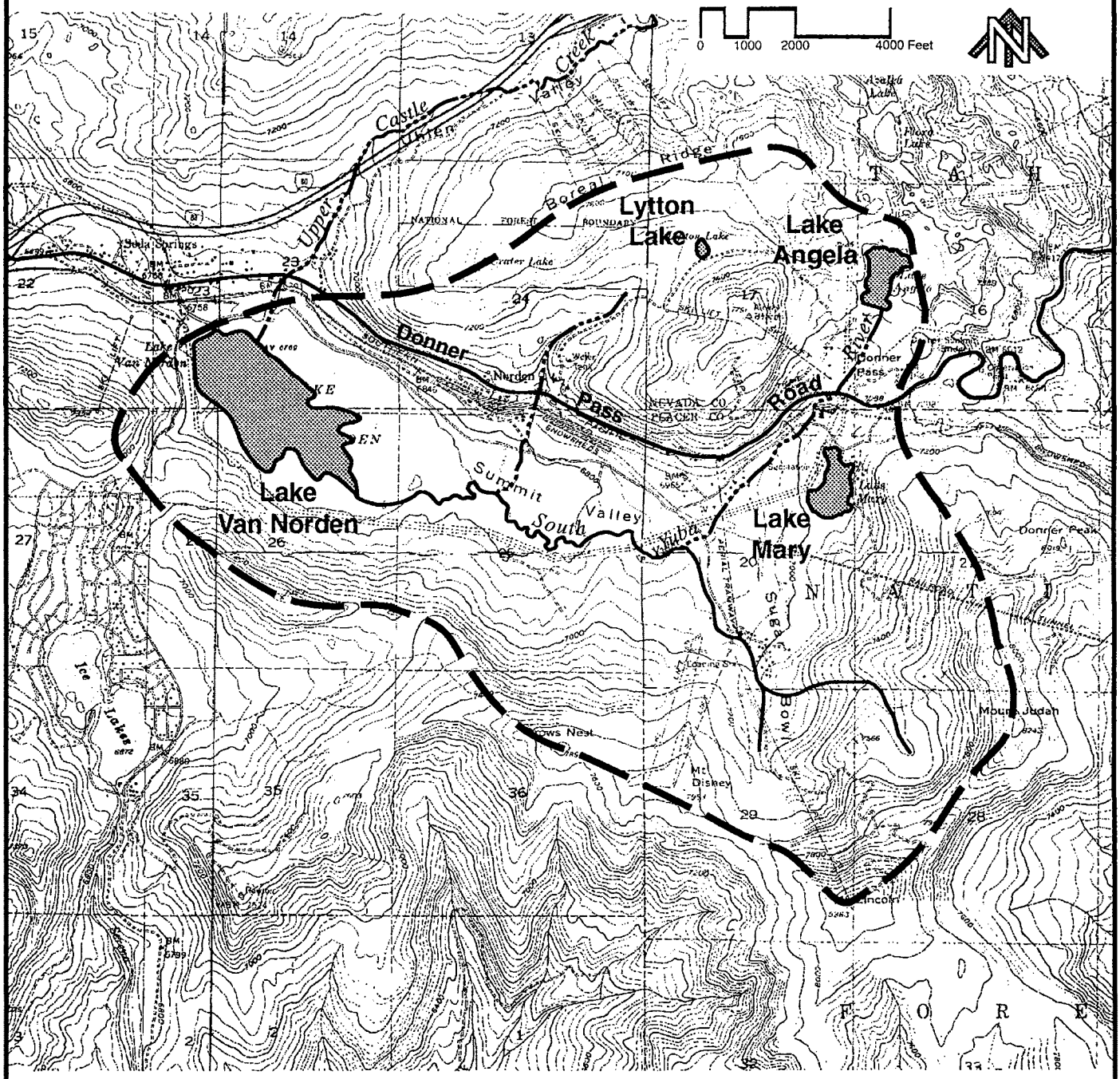


DENSE TIMBER STANDS
(40%+ Canopy Density)

Source: USFS Timber Type Maps
April 1992

Figure 2

Sugar Bowl
Environmental Impact Statement



LEGEND

Watershed Boundary

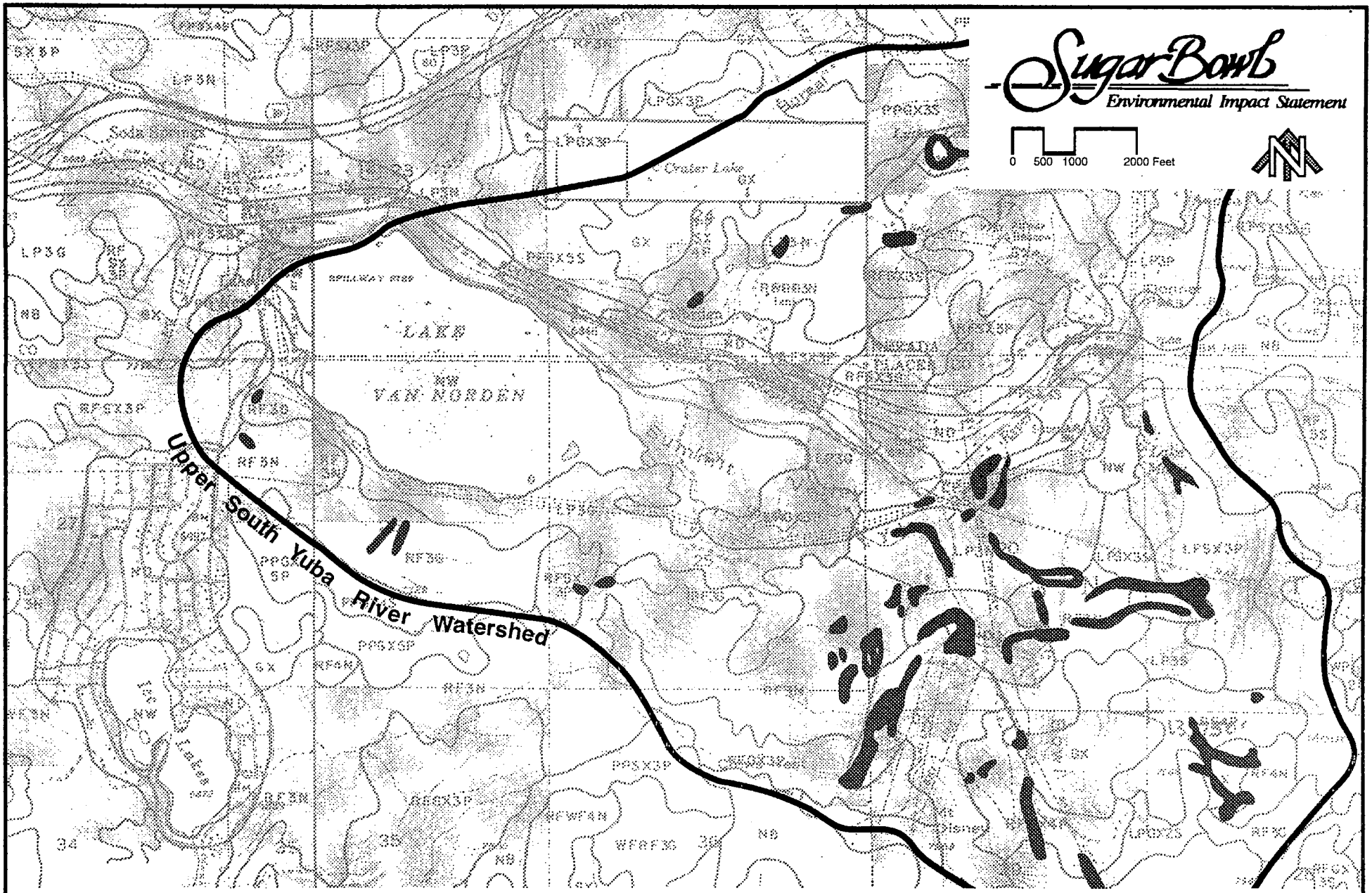
Perennial Water Resources

Intermittent Water Resources

WATER COURSES

April 1992

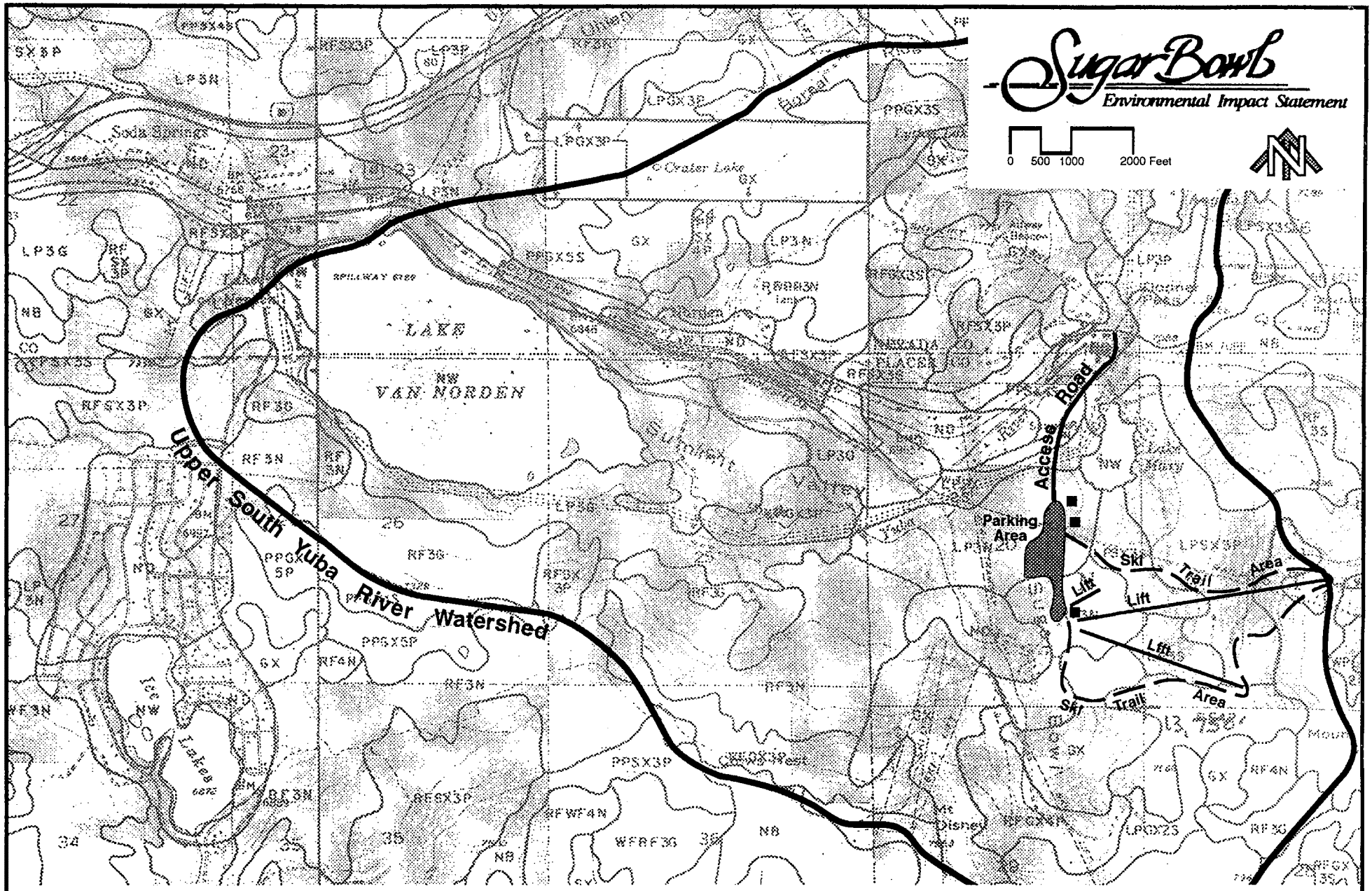
Figure 3



ALDER/WILLOW STRINGERS
(approximate locations)

Source: Aerial Photos
April 1992

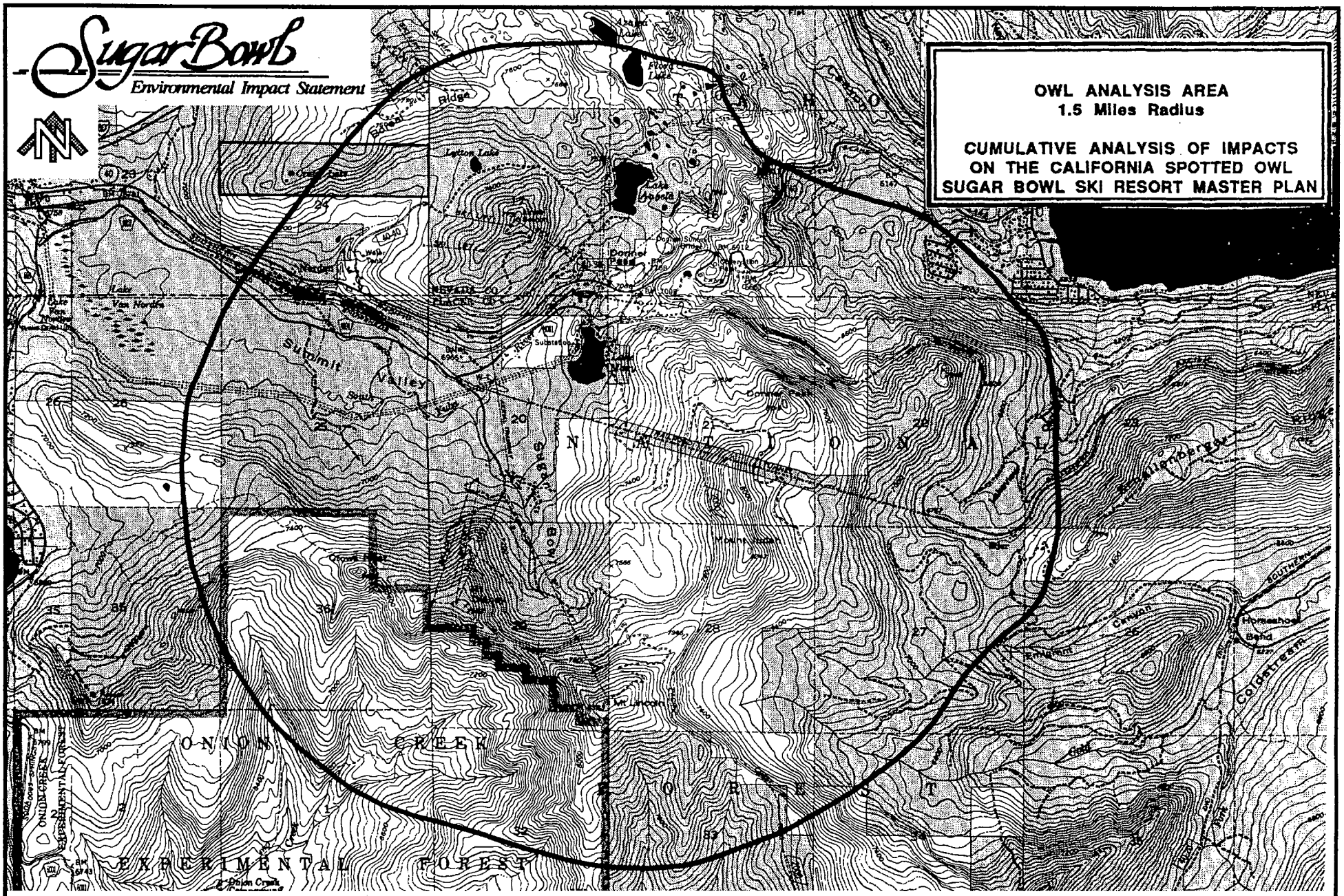
Figure 4



ACTIVITIES PROPOSED

Source: USFS Timber Type Maps
April 1992

Figure 5



Source: USFS Timber Type Maps April 1992

SPOTTED OWL ANALYSIS AREA

Figure 6

Appendix A

Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Fish and Wildlife Enhancement
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

TAKE PRIDE IN AMERICA

In Reply Refer To:
1-1-91-TA-538

June 7, 1991

Mr. James Goossens
Environmental Planner
Greystone Environmental, Inc.
555 West Benjamin Holt Drive, Suite 414
Stockton, California 95207

Subject: Species List for the Proposed Sugar Bowl Ski Area Expansion to the East on Mt. Jodah, Placer County, California

Dear Mr. Goossens:

This responds to your letter, dated May 2, 1991, requesting a list of listed and proposed endangered and threatened species that may be present within the subject project area.

To the best of our knowledge, there are no listed or proposed threatened or endangered species within the project area. However, we are attaching a list of candidate species which might, within the foreseeable future, be proposed and then undergo a final rulemaking. If the project may adversely impact a candidate species, we recommend that you consider requesting technical assistance to avoid any conflicts at a later date should the species become listed and be present within the area of the proposal. Technical assistance should be requested of our office at the letterhead address.

Should you have additional questions regarding this list or your responsibilities under the Act, please contact Peggie Kohl at (916) 978-4866 or FTS 460-4866. Thank you for your interest in endangered species.

Sincerely,

for James J. Mc Kevitt

Wayne S. White
Field Supervisor

Attachment

ATTACHMENT A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED SUGAR BOWL SKI AREA EXPANSION TO THE EAST ON MOUNT JUDAH, PLACER COUNTY, CALIFORNIA
(1-1-91-TA-538, JUNE 7, 1991)

Listed Species

None

Candidate Species

Amphibian

California red-legged frog, *Rana aurora draytoni* (2)
Mount lyell salamander, *Hydromantes platycephalus* (2)

Mammals

Sierra Nevada red fox, *Vulpes vulpes necator* (2)
Sierra Nevada snowshoe hare, *Lepus americanus tahoensis* (2)
white-footed vole, *Arborimus albipes* (2)
California bighorn sheep, *Ovis candensis californiana* (2)

(E)--Endangered (T)--Threatened (CH)--Critical Habitat
(1)--Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
(1R)-Recommended for Category 1 status.
(2R)-Recommended for Category 2 status.
(*)--Possibly extinct.

Appendix B

Spotted Owl Evaluations

TAHOE NATIONAL FOREST
Truckee Ranger District

Supplement to the Biological Evaluation For the Proposed

SUGAR BOWL SKI RESORT MASTER PLAN
Portions of Sections 20 and 21, T. 17 N., R. 15 E., MDBM
Elevation: 7,000 to 7,900'

August 20, 1991

INTRODUCTION:

This is a supplement to the "Biological Evaluation for the Sugar Bowl Master Plan". This supplement reviews the findings of analyzing the direct, indirect, and cumulative effects upon the **California Spotted Owl.**

METHODS OF EVALUATION:

The evaluation for California Spotted Owl included a review of known owl locations, reviewing exiscing and post project habitat, and field surveys for owls within 1.3 miles of the project area.

A. Sighting Records- Sighting records were reviewed for the project area and terrain as far as 4 miles from the project area.

B. Habitat Evaluation- Existing nesting and foraging habitat was evaluated using timber type maps updated by knowledge of the field and aerial photo reviews. A review of existing and pending timber harvest plans provided additional insight as to the status of available nesting and foraging habitat on private property.

An Owl Use Area of approximately 4,112 acres was drawn to reflect the anticipated relationship between the Onion Creek owl and it's habitat needs. This Owl Use Area contains abundant nesting and foraging habitat.

An analysis area 1.5 miles surrounding the project area was considered but not enough suitable habitat is found to be available to support an owl.

The area north of the Onion Owl Use area, and including the Sugar Bowl Planning Area, is fragmented by existing natural and man influenced openings. This area was analyzed to look for the potential of a predicted owl. There are are few acres of suitable habitat available in this area.

RESULTS:

A. Sighting Records- An owl (1-U), first discovered by a private Wildlife Biologist in 1984 was again located by calling efforts in August of 1991. This owl is located within the Onion Creek Experimental Forest about 2.5 miles Southwest of the Project area. The land between the project area and the Onion Creek Owl site is largely void of timber either naturally (the Crest of the Sierra Nevada Mountains) or as result of downhill ski developments that were originally cut 40 to 50 years ago. Under the direction and guidance of a Forest Service Wildlife Biologist, a private Registered Professional Forester, conducted owl callings from 6-15-91 through 7-24-91. These supplemented callings performed by Forest Service staff in 1990 to meet the 6 call protocol. There were no responses to these calling efforts.

B. Habitat Evaluation- The project area is in a bowl near the crest of the Sierra Nevada Mountains with extensive natural treeless areas to the north, west, and south. Existing developments near the project area include two downhill ski resorts, a major powerline/railroad/ highway corridor, and a large treeless lake bed. Most of the timber covered area west of the Ski Resort's property was selectively harvested in the 1980's. Much of the Private timber east of the crest was harvested in 1990 with additional logging in progress or under the status of a pending timber harvest plan. A timber harvest plan has been filed to salvage/sanitize the the private area immediately west of the National Forest timber stand. The natural crest setting, coupled with the influence of development and harvesting leaves a relatively isolated block of 50%+ crown closure timbered area. Within this isolated block, development of ski trails, ski lifts, and a daylodge would modify the vegetative cover on approximately 15 acres. As a connected action, the development of parking lots, maintenance buildings, and other support structures would modify an additional 9 private acres of this same timber stand. Refer to the attached "Cumulative Analysis of Impacts on the California Spotted Owl for the Sugar Bowl Ski Resort Master Plan".

EFFECTS OF PROJECT IMPLEMENTATION:

The existing natural and man influenced nature of the vegetation near the project area will not support a predictable owl. Additional disturbances to the vegetative cover, under consideration in any of the project alternatives, will have no effect on the owl in the Onion Creek area (1-U). The project therefore will have no direct, indirect, or cumulative effects on the California Spotted Owl.

PREPARED BY:

_____

Dave Connell
Zone Wildlife Biologist

CUMULATIVE ANALYSIS OF IMPACTS ON THE CALIFORNIA SPOTTED OWL

SUGAR BOWL SKI RESORT MASTER PLAN
Portions of Sections 20 and 21, T. 17 N., R. 15 E., MDBM
Elevation: 7,000 to 7,900

Truckee Ranger District

OVERVIEW:

This is a proposal from one of our ski resort partners to be allowed to develop approximately 126 acres of National Forest System Lands to accommodate approximately 3,000 additional skiers at one time. The proposal involves the development of a new access road, parking, daylodge, maintenance, and employee housing facilities, and 3 new chairlifts and associated ski trails. The proposal involves development on both public and private properties.

The analysis has been in progress for three years. A DEIS was circulated in late 1990. The comment period closed in November of 1990. Of the +/- 500 comments received, none presented issues associated with the California Spotted Owl. The Wilderness Society, however, did ask about "Old Growth" impacts.

The consequences of four alternatives that were considered in detail were presented in the DEIS. All three action alternatives would involve development within a National Forest timber stand that has 50% crown closure. The degree of ski run development within this stand does differ by alternative but all involve the development of a day lodge facility within this timber covered area. Under each of the action alternatives, additional developments including parking lots and support structures would be constructed in a privately owned timber stand that has 50% crown closure. Again, the scale and arrangement of development does vary by alternative.

The project area is in a bowl near the crest of the Sierra Nevada Mountains with extensive natural treeless areas to the north, west, and south. Existing developments near the project area include two downhill ski resorts, a major powerline/railroad/highway corridor, and a large treeless lake bed. Most of the timber covered area west of the Ski Resort's property was selectively harvested in the 1980's. Much of the Private timber east of the crest was harvested in 1990 with additional logging in progress or under the status of a pending timber harvest plan. A timber harvest plan has been filed to salvage/sanitize the private area immediately west of the National Forest timber stand. The natural crest setting, coupled with the influence of development and harvesting leaves a relatively isolated block of 50%+ crown closure timber area.

EXISTING OWL STATUS:

No owls have been located within the project area or within a 1.3 mile radius of the proposed development. Under the direction and guidance of a Forest Service Wildlife Biologist, a private Registered Professional Forester conducted owl callings from 6-15-91 through 7-24-91. These supplemented callings performed by Forest Service staff in 1990. The combined efforts meet the 6 visit protocol. There were no responses to these calling efforts.

An owl (1-U), first discovered by a private Wildlife Biologist in 1984 was again located by calling efforts in August of 1991. This owl is located within the Onion Creek Experimental Forest about 2.5 miles Southwest of the Project area. The land between the project area and the Onion Creek Owl site is largely void of timber either naturally (the Crest of the Sierra Nevada Mountains) or as result of downhill ski developments that were originally cut 40 to 50 years ago.

HABITAT ANALYSIS:

An Owl Use Area of approximately 4,112 acres (Exhibit 1) was drawn to reflect the anticipated relationship between the Onion Creek owl and it's habitat needs. This Owl Use Area contains abundant nesting and foraging habitat.

An analysis area 1.5 miles surrounding the project area (Exhibit 2) was considered but not enough suitable habitat is found to be available to support an owl.

The area north of the Onion Owl Use area, and including the Sugar Bowl Planning Area, is fragmented be existing natural and man influenced openings. This area was analyzed to look for the potential of a predicted owl. Because there are very few acres of suitable habitat available, there is not a potential for predicting an owl. Again, there have been no sightings of resident owls in this area.

CONCLUSIONS:

The existing natural and man influenced nature of the vegetation near the project area will not support a predictable owl. Additional disturbances to the vegetative cover, under consideration in any of the project alternatives, will have no effect on the owl (1-U) in the Onion Creek area. Hence, the preferred alternative does not result in negative effect on the know owl.

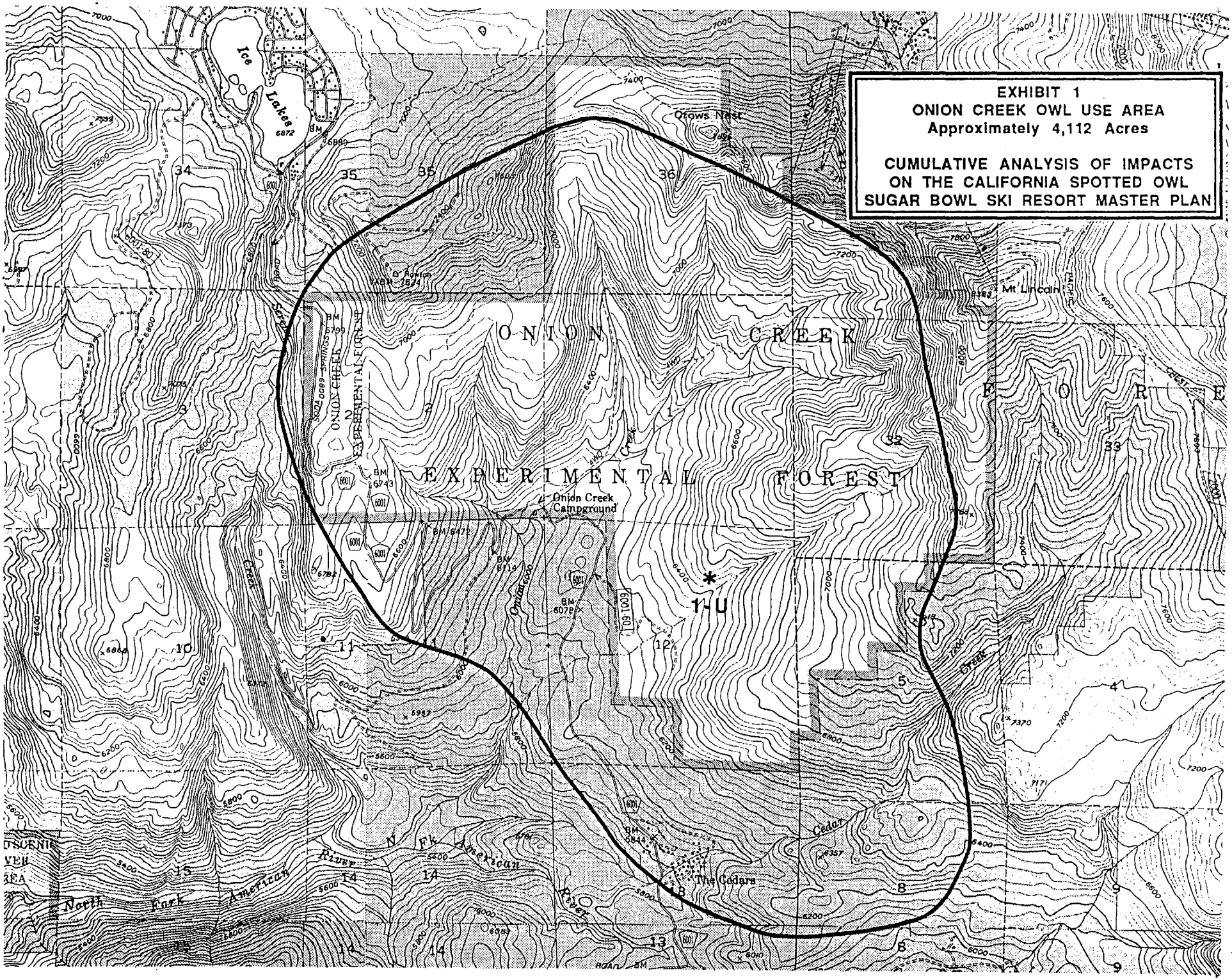


EXHIBIT 1
ONION CREEK OWL USE AREA
Approximately 4,112 Acres
CUMULATIVE ANALYSIS OF IMPACTS
ON THE CALIFORNIA SPOTTED OWL
SUGAR BOWL SKI RESORT MASTER PLAN
Ice Lakes
Crows Nest
Mt Lincoln
ONION CREEK
EXPERIMENTAL FOREST
Onion Creek Campground
1-U
The Cedars
North Fork American River
N Fk American River
Cedar Creek

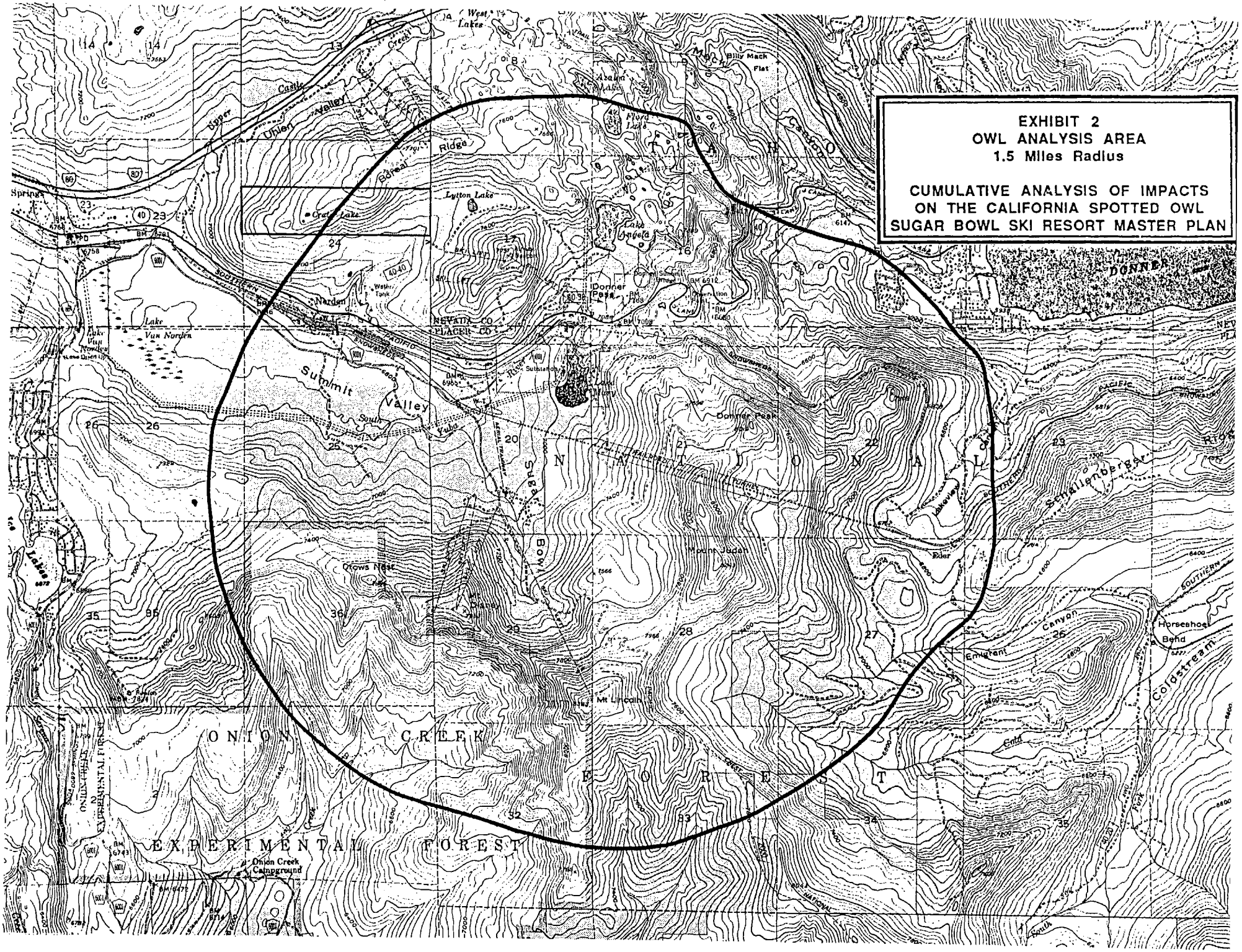


EXHIBIT 2
OWL ANALYSIS AREA
1.5 Miles Radius
CUMULATIVE ANALYSIS OF IMPACTS
ON THE CALIFORNIA SPOTTED OWL
SUGAR BOWL SKI RESORT MASTER PLAN
Castle Valley
Upper Union Valley
Boreal Ridge
Lytton Lake
Lake Van Norden
Summit Valley
Donner Peak
Mount Judah
Mt Lincoln
Mt Disney
Crows Nest
Onion Creek Campground
EXPERIMENTAL FOREST
ONION CREEK
DONNER SUMMIT
Serpentine Canyon
Horseshoe Bend
Coldstream Canyon
Emigrant Gap
Billy Mack Flat
Lake Angela
Donner Pass
Eder
Yuba
Bowl
Rainbow
Pacific
Southern
Nevada Co
Placer Co